One of the vapour engines for which a patent has been obtained in England, will be found figured and described after that of Brown; we do not deem it necessary to make any particular remarks upon its structure, as our objections are of a general nature, resulting from the unavoidable defects in workmanship, and the necessary consequences of wear, and derangement, incident to all machines, and particularly to those which are massive.

Description of Mr. Brown's engine, in that form of it in which it was intended to raise water, which afterwards flowing upon an overshot water wheel, was to give motion to machinery.

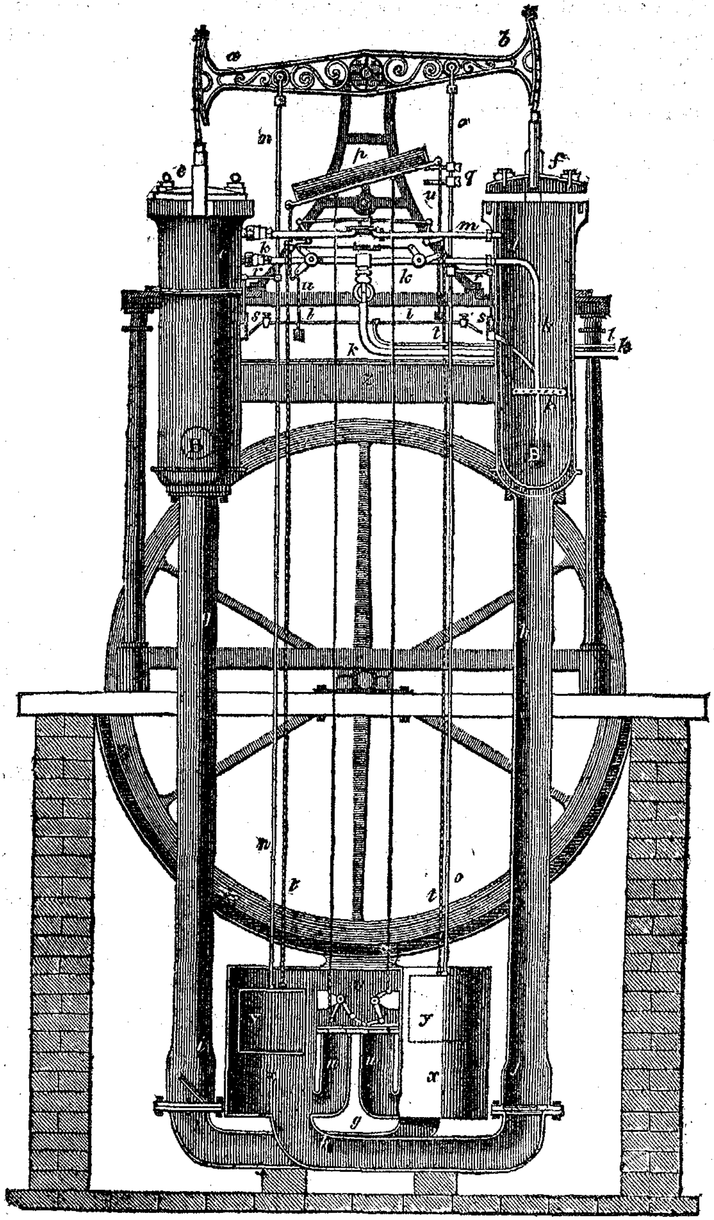
The two cylinders, *c* and *d*, are the vessels in which the vacuum is to be obtained; from these descend the pipes *g i g* and *h j h*, leading into the lower cylinders *x x*, which communicate with a reservoir of water, and from which the water rises along those pipes to fill the vacuum cylinders alternately. The water thus supplied is discharged through the pipes B into the tank or trough *z*, whence it falls upon the overshot water-wheel, and by the rotatory motion thus produced, gives power to such machinery with which it may be connected. The water runs from the wheel, along a case surrounding its lower half, into a reservoir *v*, from which the lower cylinders *x x* are alternately supplied.

In order to produce the vacuum, the necessary quantity of gas is supplied to the cylinders by means of the pipe *k k k*, to be conveniently attached to a gasometer. The gas also passes along the small pipe *l l*, (communicating likewise with the gasometer), and being lighted at both ends of that pipe, is constantly burning for the purpose of igniting the gas within the cylinders.

The water in the reservoir *v*, passing down one of the pipes *w* into one of the lower cylinders *x*, causes the float *y*, in that cylinder, to rise, and pushing up the rod *o*, raises the end *b* of the beam, which of course draws up with it the cap *f*, and forces down the cap *e* of the other cylinder *c*.

The gas being admitted along the pipe *k*, the flame from the pipe *l* is now freely communicated to the gas in the cylinder through the orifice, by the opening of the sliding valve *s*, which is raised by the arm *r*, lifted by the rod *o*, by means of the beam.

To produce the intermitting action of each cylinder, some subordinate machinery is put in operation, by chains and rods attached to a glass or iron vessel *p*, partly filled with mercury, and, turning upon a pivot, each end receives its movements of elevation and depression from the rise and fall of the projecting arms *q*, by the action of the beam above; the mercury being furnished for the purpose of regulating the supply of the gas into the cylinders, and the movement of the slide in the trough *v*. By the action thus communicated, the water from the reservoir flows down the pipe *w* into the vessel *x*, and produces the elevation of the float *y* and the rod *n*, and raises the cap *e* by the ascent of the beam at *a*.



The motion thus caused in this part of the machinery, operating upon its duplicate parts on the other side, of course produces by its action, a corresponding movement; and the slider in the trough *v*, moved by the action of the mercurial tube *p*, being removed from its position, allows the water to fall into the other pipe *w*, and as it ascends, suffers the float *y* to descend, and rising into the main cylinder, thus lifts again the beam at *b*, and its connexions, and forces down the cap *e* on the top of the other cylinder.

After the vacuum is effected in the cylinders, the air must be admitted, to allow the water to be discharged, and the caps to be raised: this is accomplished by means of a sliding valve in the air pipe *mm*, acted upon by chains *t t*, attached to the floats in the reservoir, and as motion is given to them, the valve is made to slide backwards and forwards, so as to allow of the free admission of atmospheric air.

Chains *u u*, with suspended weights, open the cocks in the pipe *k k*, and produce the alternate flow of the gas, and regulate and modify its supply.

In the pipes *g i g* and *h j h* are clacks, or valves, to prevent the return of the water, when the air is admitted into the cylinders.

Mr. Brown claims to be the inventor of the combination above described for effecting a vacuum, *however much* it may be *varied* by the *mechanical means* with which it may be used; and also, the inventor of applying a vacuum produced by the *combustion* of inflammable gas, to raising water, and to the production of motion in machinery by the pressure of the atmosphere.

Specification of a patent granted to Thomas Howard, for an engine to be set in motion by the vapour of alcohol, ether, or other volatile liquids.

I ERECT two metal cylinders (A B, drawing No. 1,) made firm and secure by any of the ordinary methods. These cylinders communicate with each other at the lower part, by a horizontal tube, or smaller cylinder, or otherwise, so as to form a free passage at C, from one to the other. Then such a quantity of fixed oil, mercury, or other fluid, or substance becoming fluid, but not evaporating at the degree of heat to which it will be there exposed, is introduced into these cylinders, as will fill the base of the one, the intermediate passage, and nearly the whole of the other cylinder, to serve as a medium of heat necessary for generating the vapour for working the engine. Within one cylinder B, is placed a piston, exposed above to the pressure of the atmosphere, and having a rod and stuffing, in the usual manner. In the other cylinder A, is placed a thin metallic dish, floating freely upon the oil, or other fluid before mentioned. This latter cylinder has a top fastened down quite air-tight, through the centre of which top, is brought a tube E, proceeding from the condenser (hereinafter described,) the lower end of which tube within the cylinder, terminates in a nosle pierced with many small holes. This tube is passed through a piece of cork, wood, or other imperfect conductor of heat, fixed into the top of the cylinder with a ring